ABSTRACT

INTRODUCTION:

Stainless steel crowns were the successful full coronal restorations in managing the severely destructed teeth which were unable to fulfill the demand of esthetics. Advancements in material science lead to the development of preformed pediatric zirconia crowns for restoring primary molars. Durability of these materials depends on their morphological and mechanical features.

AIM AND OBJECTIVE:

To evaluate and compare the compressive strength, microleakage and amount of primary tooth reduction required for posterior zirconia crowns with that of stainless steel crowns.

MATERIALS AND METHODS:

Sixty extracted primary molar teeth (30 teeth in each group) without restoration and developmental defects, and with root structure more than 1/3rd – were collected and restored with stainless steel crowns (30) & zirconia crowns (30). 15 teeth with crowns in each group were tested for micro leakage with dye penetration method and compressive strength using Instron universal testing machine (3382) and amount of tooth reduction required for crown placement for 15 samples were calculated by subtracting post-weight from the pre-weight using digital weighing balance.

RESULTS:

The results showed that stainless steel crowns exhibited significantly higher compressive strength (783.94 $\pm$ 24.16) N than the zirconia crowns (545.68 $\pm$ 27.42) N (p= 0.001). Minimal microleakage values was observed in both the groups with no statistically significant difference (p= 0.130). Zirconia crowns required greater amount of tooth reduction (0.260 $\pm$ 0.055) gms than the stainless steel crowns (0.136 $\pm$ 0.050) gms which was highly significant (p= 0.001).

CONCLUSION:

Both zirconia and stainless steel crowns were good options for full coronal restorations. Stainless steel crowns are better option in terms of compressive strength, when the esthetics is of prime concern, zirconia crowns are good alternative.

KEY WORDS: Extracted primary molar teeth, Zirconia, Stainless steel crowns.